APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/907,904	07/19/2001	Robert Y. Seward	10010879-1	9947

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER
BOOKER, KELVIN E

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

<table>
<tr><td rowspan="3">Office Action Summary</td><td colspan="2">Application No.
09/907,904</td><td colspan="2">Applicant(s)
SEWARD, ROBERT Y.</td></tr>
<tr><td colspan="2">Examiner</td><td>Art Unit</td><td></td></tr>
<tr><td colspan="2">Kelvin E Booker</td><td>2121</td><td></td></tr>
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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*25 March 2004*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Detailed Office Action*.

DETAILED ACTION

Response to Amendment

1. In Amendment "A", filed March 25, 2004 (see paper no. 5), **claims 1, 8, 15 and 17** have been amended, and **claims 1-20** are presented for further consideration.

Response to Arguments

2. Applicant's arguments with respect to **claims 1-20** have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-20** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 8 and 15 provide for the use of *associating* offspring solutions and *selecting* a second-generation of solutions based upon the previous step of *association*, but, since the claims do not set forth any steps involved in the claimed "*associate*" method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. **Claims 1-20** are rejected under 35 U.S.C. 101 because the invention as disclosed in **claims 1, 8 and 15** are directed to non-statutory subject matter. While the claims are in the technological arts, they are not limited to practical applications in the technological arts.

Specifically, the claims focus on a series of steps to be performed on a computer, but the ideas are disclosed abstractly from any particular practical application. As disclosed, **independent claims 1 and 8** provide for the use of *associating* offspring solutions and *selecting* a second-generation of solutions based upon an undefined and unclear relational process. The claims fail to disclose the necessary steps required to enable the claimed associative relationship, which is the basis for *selecting the second-generation of solutions*.

Further, **independent claim 15** focuses on a computer system wherein the elements are recited in means plus function format, however the claim fails to define a statutory specific system. A machine or manufacture or system claim may be one of two types: (1) a claim that encompasses any and every machine for performing the underlying process or any and every manufacture that can cause a computer to perform the underlying process, or (2) a claim that defines a specific machine or manufacture. When a claim is of the first type, Office personnel are to evaluate the underlying process the computer will perform in order to determine the patentability of the product.

The mere fact that a hardware element is recited in the claim does not necessarily limit the claim to a specific machine or manufacture. If a product claim encompasses any and every computer implementation of a process, when read in light of the specification, it should be examined on the basis of the underlying process. Such a claim can be recognized, as it will define the physical characteristics of a computer or computer component exclusively as functions or steps to be performed on or by a computer, and encompass any and every product in the stated class, configured in any manner to perform the process.

Claims that define a computer related invention as a specific machine or specific article of manufacture must define the physical structure of the machine or manufacture in terms of its hardware or hardware and "specific software." The applicant may define the physical structure of a programmed computer or its hardware or software components in any manner that can be clearly understood by a person skilled in the relevant art. Generally a claim drawn to a particular programmed computer should identify the elements of the computer and indicate how those elements are configured in either hardware or a combination of hardware and specific software.

To constitutionally interpret the word "process", the Supreme Court has held that: "***A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing. ***The Process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be a secondary consequence."(emphasis added) Diamond, Commission of Patents and Trademarks v. Diehr and Lutton, 209 USPQ 1, 6 (1981) quoting Cochrane v. Deener, 94 U.S. 780, 787-788 (1876).

This Constitutional interpretation of the word "process" is a long-standing one that the

Supreme Court requires to be applied in interpreting 35 USC 101. Diamond v. Diehr at 6.

Consequently, the us of that interpretation is Constitutionally required when we interpret the

Federal Circuit's standard that a "new and useful process" is one that produces a useful,

concrete, and tangible result". Cf. State Street Bank & Trust Co. v. Signature Financial Group,

Inc., 47 USPQ2d 1596, 1600-1601 (Fed. Cir. 1998).

Applicant discloses no "certain substances" that have been "transformed or reduced" in

that applicant's claims disclose no specific computer-readable medium, no manipulation of

specific data representing physical objects or activities (pre-computer activity), nor do they

disclose any specific independent physical acts being performed by the invention (post-computer

activity).

Claim Rejections - 35 USC § 102

7.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8.   **Claims 1, 2, 4-9, 11-16 and 18-20** are rejected under 35 U.S.C. 102(b) as being anticipated

by Koza, "Genetically Breeding Populations of Computer Programs to Solve Problems in

Artificial Intelligence" [hereafter Koza].

As per claim 1, Koza teaches of a method of selecting a solution comprising:

A. creating first and second separate populations of parent solutions (see page 2, column 1: "The basic genetic operations...trees with ordered branches"; and page 2, column 2, two parental LISP S-expressions);

B. combining at least one of the parent solutions from the first population with at least one of the parent solutions from the second population to create offspring solutions (see page 2, column 1: "The basic genetic operations...trees with ordered branches", in particular the section on crossover operations);

C. *associating* the offspring solutions with the first population (see page 2, column 1: "The basic genetic operations...trees with ordered branches"; page 2, column 2: "These two crossover fragments...crossover are shown below"; and page 2, column 2, the associated two 'or' graphs); and

D. selecting second-generation solutions for the first population from the offspring solutions and the parent solutions (see page 2, column 2: "These two crossover fragments...(and D0 D1))").

As per claim 2, Koza teaches of a method further comprising keeping the second-generation solutions and discarding all remaining solutions in the first population (see page 2, column 2: "These two crossover fragments...(and D0 D1))", selecting actions based upon a selected relationship).

As per claim 4, Koza teaches of a method further comprising combining at least one of the second-generation solutions from the first population with at least one second-generation solution from the second population (see page 2, column 1: "The basic genetic operations...trees

with ordered branches"; page 2, column 2: "These two crossover fragments...crossover are

shown below"; and page 2, column 2, the associated two 'or' graphs).

As per claim 5, Koza teaches of a method further comprising mutating at least one of the

second-generation solutions (see page 2, column 2: "These two crossover fragments...crossover

are shown below"; and page 2, column 2, the associated two 'or' graphs);.

As per claim 6, Koza teaches of a method further comprising keeping the first population

separate from the second population (see page 2, column 2: two parental LISP S-expressions;

page 2, column 2: "The two parental...sub-trees shown below"; and page 2, column 2, the

respective 'not' and 'and' graphs);

As per claim 7, Koza teaches of a method wherein the step of combining comprises

combining each of the parent solutions in the first population with at least one of the parent

solutions in the second population (see page 2, column 2: "These two crossover fragments...(and

D0 D1))").

As per claims 8, 9 and 11-14, the same limitations are subjected to in claims 1, 2 and 4-

7, respectively, therefore the same rejections apply (see claims 1, 2 and 4-7 above).

As per claim 15, 16 and 18-20, the same limitations are subjected to in claims 1, 2 and

4-7, respectively, therefore the same rejections apply (see claims 1, 2 and 4-7 above).

Conclusion

9.   The following prior art made of record, and not relied upon, is considered pertinent to

applicant's disclosure:

A. Chu et al., "The Effect of Population Structure on The Rate of Convergence of Genetic Algorithms";

B. Merkle et al., "Scalability of an MPI-Based Fast Mess Genetic Algorithm";

C. Eick et al., "Learning Bayesian Classification Rules Through Genetic Algorithms";

D. Liang et al., "A Sparse Matrix Representation For Production Scheduling Using Genetic Algorithms";

E. Khuri et al., "The Zero/One Multiple Knapsack Problem and Genetic Algorithms"; and

F. Koza et al., "Automatic Programming of Robots Using Genetic Programming".

10. An inquiry concerning this communication or earlier communications from the examiner should be directed to Kelvin Booker whose telephone number is (703) 308-4088. The examiner can normally be reached on Monday-Friday from 7:00 AM-5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight, can be reached on (703) 308-3179. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306.

An inquiry of a general nature or relating to the status of this application proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

K.E.B.

Art Unit 2121

May 28, 2004

Anthony Knight
Supervisory Patent Examiner
Group 3600